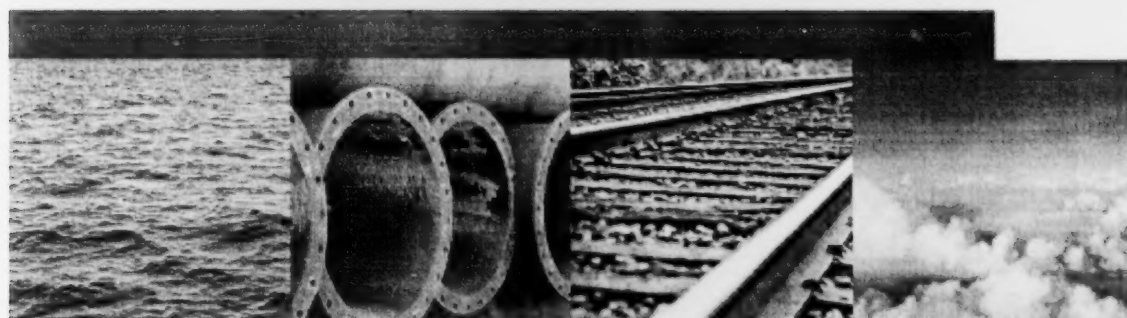




Transportation Safety Board  
of Canada  
Bureau de la sécurité des transports  
du Canada



## **Annual Report to Parliament 2008-2009**

Canada

Transportation Safety Board of Canada  
Place du Centre  
200 Promenade du Portage  
4th Floor  
Gatineau, Quebec K1A 1K8  
819-994-3741  
1 800 387-3557  
[www.tsb-bst.gc.ca](http://www.tsb-bst.gc.ca)  
[communications@tsb.gc.ca](mailto:communications@tsb.gc.ca)

© Minister of Public Works and Government Services Canada 2009  
Cat. No. TU1-2009  
ISBN 978-0-662-06770-2

**ANNUAL REPORT TO PARLIAMENT 2008-2009**

Place du Centre  
200 Promenade du Portage  
4th Floor  
Gatineau, Quebec K1A 1K8


01 June 2009

The Honourable Josée Verner, P.C., M.P.  
President of the Queen's Privy Council for Canada  
House of Commons  
Ottawa, Ontario K1A 0A6

Dear Minister:

In accordance with subsection 13(3) of the *Canadian Transportation Accident Investigation and Safety Board Act*, the Board is pleased to submit, through you, its annual report to Parliament for the period 01 April 2008 to 31 March 2009.

Yours sincerely,

A handwritten signature in cursive script, reading "Wendy A. Tadros".

Wendy A. Tadros  
Chair



# Table of Contents

<b>The Chair's Message .....</b>	<b>1</b>
<b>Section 1: Overview .....</b>	<b>3</b>
1.1 Members of the Board .....	3
1.2 Senior Management .....	4
1.3 Mission of the TSB .....	4
1.4 Independence .....	4
<b>Section 2: Activities .....</b>	<b>5</b>
2.1 Occurrences, Investigations and Safety Action .....	5
2.2 Communicating Transportation Safety to Canadians and the Transportation Community .....	9
2.3 Marine Sector .....	10
2.3.1 Annual Statistics .....	10
2.3.2 Investigations .....	12
2.3.3 Safety Actions Taken .....	12
2.3.3.1 Marine Recommendations Issued in 2008-2009 .....	13
2.3.3.2 Assessment of Responses to Marine Recommendations Issued in 2007-2008 .....	14
2.3.3.3 Other Marine Safety Actions .....	18
2.4 Pipeline Sector .....	19
2.4.1 Annual Statistics .....	19
2.4.2 Investigations .....	21
2.4.3 Safety Actions Taken .....	22
2.5 Rail Sector .....	22
2.5.1 Annual Statistics .....	22
2.5.2 Investigations .....	24
2.5.3 Safety Actions Taken .....	25
2.5.3.1 Rail Recommendations Issued in 2008-2009 .....	25
2.5.3.2 Assessment of Responses to Rail Recommendations Issued in 2007-2008 .....	26
2.5.3.3 Other Rail Safety Actions .....	28
2.6 Air Sector .....	30
2.6.1 Annual Statistics .....	30
2.6.2 Investigations .....	31
2.6.3 Safety Actions Taken .....	32
2.6.3.1 Air Recommendations Issued in 2008-2009 .....	32
2.6.3.2 Assessment of Responses to Air Recommendations Issued in 2007-2008 .....	33
2.6.3.3 Other Air Safety Actions .....	44

## Appendices

Appendix A – Reports Released by the TSB in 2008-2009 by Sector .....	46
Appendix B – Glossary .....	51
Appendix C – Assessment Categories and Ratings for Responses to Board Recommendations .....	52
Appendix D – Deficiency File Status .....	54

## Figures

Figure 1 – Occurrences Reported to the TSB .....	5
Figure 2 – Investigations Started, in Process, and Completed .....	6
Figure 3 – Ratings of Assessments of Responses, 1999-2008 .....	8
Figure 4 – Marine Occurrences and Fatalities .....	11
Figure 5 – Canadian-Flag Shipping Accident Rates .....	11
Figure 6 – Pipeline Occurrences .....	20
Figure 7 – Pipeline Accident Rates .....	21
Figure 8 – Rail Occurrences and Fatalities .....	23
Figure 9 – Main-Track Accident Rates .....	24
Figure 10 – Air Occurrences and Fatalities .....	30
Figure 11 – Canadian-Registered Aircraft Accident Rates .....	31

## Tables

Table 1 – Safety Outputs by the TSB .....	7
Table 2 – Board Assessments of Responses to Recommendations, 1999-2008 .....	8
Table 3 – Marine Productivity .....	12
Table 4 – Pipeline Productivity .....	21
Table 5 – Rail Productivity .....	24
Table 6 – Air Productivity .....	32

## The Chair's Message

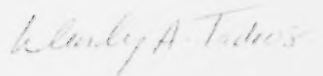
The highly skilled and dedicated investigators of the Transportation Safety Board of Canada (TSB) are continuously called upon to conduct full and independent investigations into aviation, marine, railway and pipeline accidents. They painstakingly comb through wreckage, interview survivors, gather detailed, technical information from companies and manufacturers, and analyze the data to determine what happened, why it happened and what needs to be done to reduce the risk.

Important safety lessons come out of our investigations and we have communicated these lessons with a strong voice. This past year, the Board recommended the speedy removal from service of defective freight train wheel sets and improved component tracking in the railway industry. In the aviation sector, we brought attention to the need to reduce the risks of collision in crowded airspace. The Board also called for safety upgrades and improved towing procedures for small fishing vessels sailing in icy waters, and flagged the lack of effective communications when planning repair operations in the vicinity of pipelines.

Once again this year, our challenge was to make sure that our messages are well understood by regulators, the industry and Canadians so that our recommendations will be more widely adopted. One way in which we do this is through our Board Outreach Program. This year, the main focus was the 10th anniversary of the Swissair accident. Our Board Members spoke at events in Canada, the United States, the United Kingdom and Russia to look back at what has been accomplished and to highlight what remains to be done. We also spoke at two Canadian railway safety events to highlight some outstanding safety deficiencies on Canada's railways. Our messages were well received, and we hope that they will encourage more action on our recommendations.

We will seek out ways to broaden our audience reach and work more closely with change agents to increase the uptake of our recommendations. The TSB website was updated to make our safety communications easier to find and to enhance the visibility of our recommendations and assessments of responses. This will ensure that Canadians know where we stand on action taken by regulators and industry.

We will continue to serve Canadians by conducting independent accident investigations and reporting to them on what happened and why. We will also continuously advocate for the changes needed to make transportation safer for all Canadians.



**Wendy A. Tadros**  
Chair





## Section 1: Overview

### 1.1 Members of the Board



**Chair Wendy A. Tadros**

Transportation and legal experience includes Director of Legal Services for the National Transportation Agency of Canada; Inquiry Coordinator for "The Road to Accessibility: An Inquiry into Canadian Motor Coach Services"; and counsel to the Canadian Transport Commission before the Commission of Inquiry into the Hinton Train Collision.



**Member Kathy Fox**

Transportation safety and air traffic services experience includes air traffic controller, commercial pilot, flight instructor, various management positions at Transport Canada, and Vice President of Operations at NAV CANADA. In 1999, received the Transport Canada Aviation Safety Award. In November 2004, was inducted into the Quebec Air and Space Hall of Fame.



**Member Jonathan Seymour**

Transportation policy and marine management experience includes Executive Director of International Maritime Centre–Vancouver; chartering, commercial and general manager for several shipping companies; marine policy advisor to the British Columbia government; and policy and economic consultant.



**Member James P. Walsh\***

Was the Member of the House of Assembly in Newfoundland and Labrador for the district of Conception Bay East–Bell Island from 1989 to 2003. Served as Minister of Works, Services and Transportation, and also served as Minister of Tourism and Culture, Parliamentary Secretary to the Minister of Finance and Treasury Board, and Parliamentary Secretary responsible for the Newfoundland and Labrador Housing Corporation. Also served as Caucus Chairman and Vice-Chair of the Public Accounts Committee. In 2003, received the distinction of Honorary Life Member of the Transportation Association of Canada.

*\*Member Walsh is currently on administrative leave.*



**Member R. Henry Wright**

Management and consulting experience includes auditor for the Ontario Ministry of Community and Social Services; senior management administrator of several non-profit organizations; and consultant in government and public relations.

*\* Member Wright's term ended on November 7, 2008.*

## 1.2 Senior Management

Executive Director	G. McDonald
General Counsel	A. Harding
Director General, Corporate Services	J.L. Laporte
Director General, Investigation Operations	T. Burtch
Director, Marine Investigations	Y. Myers/M. Ayeko (Acting)
Director, Rail/Pipeline Investigations	I. Naish
Director, Air Investigations	M. Clitsome
Director, Operational Services	T. Crosby
A/Director, Engineering	J. Foot/T. Givins/D. Rocheleau

## 1.3 Mission of the TSB

We conduct independent safety investigations and communicate risks in the transportation system.

## 1.4 Independence

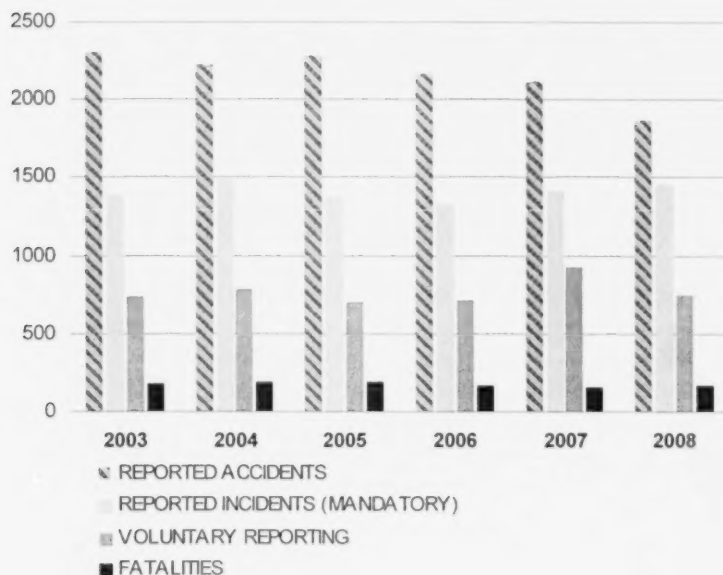
To encourage public confidence in transportation accident investigation, the investigating agency must be, and be seen to be, objective, independent and free from any conflicts of interest. The key feature of the TSB is its independence. It reports to Parliament through the President of the Queen's Privy Council for Canada and is separate from other government agencies and departments. Its independence enables it to be objective in arriving at its conclusions and recommendations. The TSB's continuing independence and credibility rest on its competence, openness, integrity and the fairness of its processes.

## Section 2: Activities

### 2.1 Occurrences, Investigations and Safety Action

In 2008, a total of 1865 accidents and 1459 incidents were reported in accordance with the TSB's regulations for mandatory reporting of occurrences.<sup>1</sup> The number of accidents in 2008 decreased by 12 per cent from the 2109 accidents reported in 2007 and by 16 per cent from the 2003-2007 annual average of 2211 accidents. The number of reported incidents increased to 1459 in 2008 from 1410 in 2007, and increased from the 2003-2007 average of 1398. There were also 742 voluntary incident reports. Fatalities totalled 161 in 2008, up 8 from the 2007 total, but down 12 from the 2003-2007 average.

**Figure 1: Occurrences Reported to the TSB**

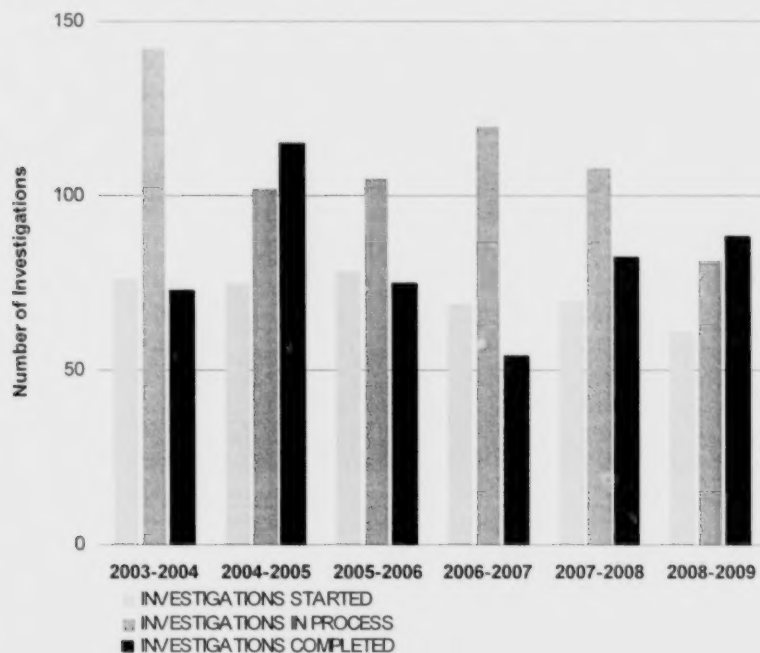


All reported occurrences were assessed in accordance with the Board's Occurrence Classification Policy to identify those with the greatest potential for advancing transportation safety. Information was entered into the TSB database for historical record, trend analysis and safety deficiency validation purposes.

<sup>1</sup> While the Board's operations are for the 2008-2009 fiscal year, occurrence statistics are for the 2008 calendar year unless otherwise indicated. Please note that, in a live database, the occurrence data are constantly being updated. Consequently, the statistics can change slightly over time. Comparisons are generally to the last 5 or 10 years. For definitions of terms such as *accident*, *incident* and *occurrence*, see Appendix B.

In fiscal year 2008-2009, investigations were undertaken for 61 of the occurrences reported to the TSB. In that same period, 88 investigations were completed, compared to 82 in the previous year.<sup>2</sup> The number of investigations in process decreased to 81 at the end of the fiscal year from 108 at the start. Average time to complete an investigation decreased to 534 days in fiscal year 2008-2009 from 630 days in the previous year.

**Figure 2: Investigations Started, in Process, and Completed**



Overall, the TSB has been successful in identifying safety deficiencies and in reducing risks in the transportation system. TSB investigations result in reports identifying safety deficiencies and, where appropriate, containing recommendations to reduce risks. Over this past year, in all cases where the TSB undertook an investigation, safety deficiencies or contributing factors were identified and communicated. These results reflect careful application of the TSB's Occurrence Classification Policy in deciding whether to investigate, and a thorough implementation of the investigation methodology. This systematic approach ensures that TSB investigation resources are invested in areas with the greatest potential safety payoffs.

<sup>2</sup> Investigations are considered complete after the final report has been issued. See Appendix A for a list of reports released by the TSB in 2008-2009 by sector.

In 2008-2009, in addition to investigation reports, the TSB issued a total of 68 safety outputs: 5 recommendations, 31 safety advisories and 32 safety information letters (see Table 1 for a breakdown by sector).

**Table 1: Safety Outputs by the TSB**

Sector	Recommendations <sup>3</sup>	Safety Advisories	Safety Information Letters
Marine	2	7	11
Pipeline	0	0	1
Rail	2	11	12
Air	1	13	8
TOTAL	5	31	32
Note: In 2008-2009, a total of 5 marine safety concerns, 4 rail safety concerns and 1 air safety concern were identified.			

Safety information is also provided informally to key stakeholders throughout the investigation process, permitting them to take immediate safety actions where appropriate. It is common practice for industry and government to take safety actions during the course of TSB investigations. Such safety actions range widely in scope and importance. Operators will often take immediate remedial action after discussion with TSB investigators (for example, to clear the sight-lines at a railway crossing by trimming bushes and vegetation). Regulators such as Transport Canada and the Federal Aviation Administration in the United States regularly issue mandatory directives requiring inspections and/or component replacement based on the TSB's preliminary findings. In such situations, rather than issuing recommendations, the TSB can then report on the corrective actions already taken by industry and government agencies.

In accordance with the *Canadian Transportation Accident Investigation and Safety Board Act*, a federal minister who is notified of a TSB recommendation must, within 90 days, advise the Board in writing of any action taken or proposed to be taken in response, or the reasons for not taking action. The Board considers each response, assessing the extent to which the related safety deficiency was addressed. When a recommendation generates responses from within and outside Canada, the Board's assessment is based primarily on the Canadian response. This year, the TSB continued to publish on its website ([www.tsb-bst.gc.ca](http://www.tsb-bst.gc.ca)) its assessment of industry and government organization responses to its recommendations made after 01 January 2005.

As presented in Table 2, during the period between 01 January 1999 and 31 December 2008, a total of 155 recommendations were assessed by the Board in the fully satisfactory or active (satisfactory intent, satisfactory in part, and unsatisfactory) categories. In addition, 7 recommendations are awaiting Board assessment, bringing the total number to 162.

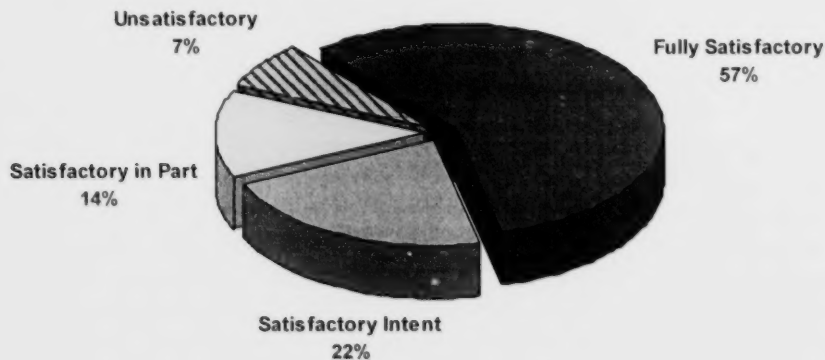
<sup>3</sup> For definitions of terms such as *recommendation*, *safety advisory* and *safety information letter*, see Appendix B.

**Table 2: Board Assessments of Responses to Recommendations, 1999-2008**

<b>Sector</b>	<b>Number of Recommendations</b>	<b>Fully Satisfactory</b>	<b>Satisfactory Intent</b>	<b>Satisfactory in Part</b>	<b>Unsatisfactory</b>
<b>Marine</b>	45	31	8	6	0
<b>Pipeline</b>	1	1	0	0	0
<b>Rail</b>	41	22	10	4	5
<b>Air</b>	68	35	16	11	6
<b>Recommendations with a Board Assessment</b>	155	89	34	21	11

In the 10-year period from 1999 to 2008, the greater majority of Board-assessed recommendations have effected positive change. As shown in Figure 3, in 79 per cent of cases (57 per cent fully satisfactory and 22 per cent satisfactory intent), change agents have taken action or plan to take action that will substantially reduce the deficiency noted in the recommendation. In 14 per cent of cases (satisfactory in part), change agents have taken or plan to take action that will only partially address the deficiency noted in the recommendation. In 7 per cent of cases (unsatisfactory), change agents have neither taken nor plan to take action that will address the deficiency noted in the recommendation.

**Figure 3: Ratings of Assessments of Responses, 1999-2008**



## **2.2 Communicating Transportation Safety to Canadians and the Transportation Community**

Telling Canadians what we learned during accident investigations is fundamental to advancing transportation safety. The TSB continuously strives to raise awareness of its investigative work, and to issue timely and accurate safety communications to Canadians which explain what happened, why it happened, and what needs to be done to make transportation safer and prevent future accidents.

To this end, the TSB communicates its findings to Canadians through routine updates to the TSB website, the production and dissemination of safety communications and final reports, and through organized media events held across the country.

This past fiscal year, we held 17 media events and responded to over 700 media inquiries through the Head Office central media line, not including those inquiries handled regionally or immediately at an accident site.

In 2008-2009, Board Members also pursued a number of key speaking engagements to connect with transportation industry stakeholders and help increase the uptake of TSB recommendations. They spoke to 11 audiences in the aviation, marine and railway industries to highlight outstanding safety deficiencies uncovered as part of TSB investigations.

Of particular note, Board Members marked the 10th anniversary of the crash of Swissair Flight 111 off the shores of Peggy's Cove, Nova Scotia, by speaking at five events in Canada, the United States, the United Kingdom and Russia. These addresses highlighted safety achievements made and outstanding safety deficiencies following our investigation of this tragic accident.

TSB investigation staff also continued to promote the TSB's work and share information about safety lessons learned by attending events and conferences in Canada and abroad. They also hosted visits from other international investigative bodies to exchange information and best practices in investigations.

This past fiscal year, the TSB published 88 investigation reports and work was undertaken to make the recommendations contained in the reports easier to locate, in both the hard copy and electronic formats. During that period, 329 new subscribers joined the TSB electronic notification system for a total of 2579 subscribers. The TSB Macro-Analysis Division published annual and monthly statistical reports and responded to 196 requests for complex transportation occurrence database information.

The TSB website was updated in 2008-2009 to make information, particularly Board recommendations and safety concerns, easier to find through the TSB homepage. The website continues to be an important resource for providing information on accident



investigations and transportation safety in general. We received an average of 82 503 daily hits and 28 214 daily visits. While most of the visits were from the United States, our website was viewed by people around the world.

In summary, 2008-2009 was a very active year in reaching out to Canadians and to stakeholders in the transportation community.

## **2.3 Marine Sector**

### **2.3.1 Annual Statistics**

In all, 418 marine accidents were reported to the TSB in 2008, an 8 per cent decrease from the 2007 total of 456 and 15 per cent decrease from the 2003-2007 average of 491. Marine fatalities totalled 24 in 2008, up from the 2007 total of 14 and the 2003-2007 average of 19.

Shipping accidents, which comprised 86 per cent of marine accidents, reached a 34-year low of 359 in 2008, down from 396 in 2007 and from the five-year average of 437. Nearly half of all vessels involved in shipping accidents were fishing vessels. Accidents to persons aboard ship, which include falls, electrocution, and other types of injuries requiring hospitalization, totalled 59 in 2008, a 2 per cent decrease from the 2007 total of 60 and a 9 per cent increase from the five-year average of 54.

Marine activity for Canadian commercial non-fishing vessels over 15 gross tons (excluding passenger vessels and cruise ships) increased by 3 per cent from the 2003-2007 average. This yields an accident rate of 3.4 accidents per 1000 movements, unchanged from the five-year average. Marine activity for foreign commercial non-fishing vessels decreased by 1.7 per cent from the 2003-2007 average while the accident rate decreased by 31 per cent to 1.1 accidents per 1000 movements, down from the five-year average of 1.6.

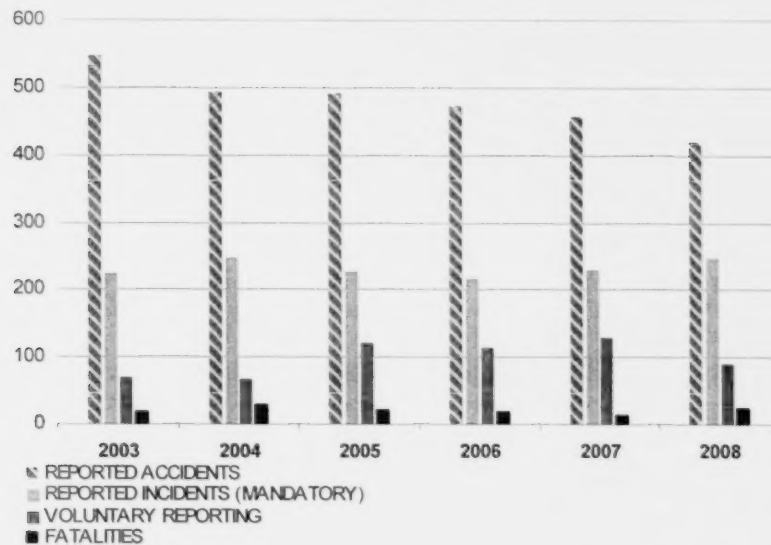
In 2008, shipping accidents resulted in 13 fatalities, up from 3 in 2007 and the five-year average of 12. Accidents aboard ship resulted in 11 fatalities, the same as the 2007 total and up 4 from the five-year average.

Thirty-three vessels were reported lost in 2008, up from the 2007 total of 31 and the five-year average of 30.

In 2008, 247 marine incidents were reported to the TSB in accordance with the mandatory reporting requirements. This represents an 8 per cent increase from the 2007 total of 228 and the five-year average of 229.

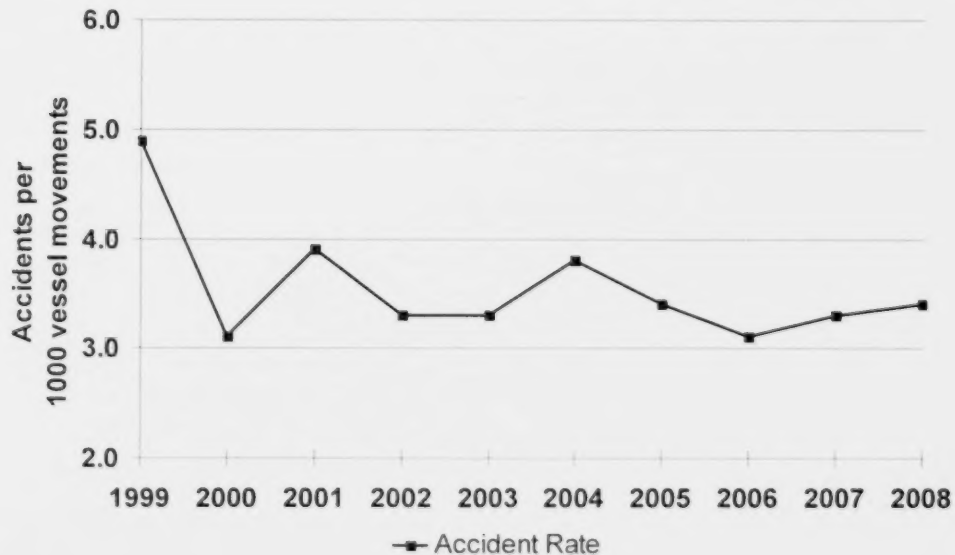


**Figure 4: Marine Occurrences and Fatalities**



One indicator of marine safety in Canada is the Canadian-flag shipping accident rate. The 2008 accident rate increased to 3.4 accidents per 1000 movements from the 2007 rate of 3.3.

**Figure 5: Canadian-Flag Shipping Accident Rates**



### 2.3.2 Investigations

In 2008-2009, 6 marine investigations were started and 18 investigations were completed. The number of investigations completed is comparable to last year. The average duration of completed investigations decreased to 796 days compared to 936 days the year before.

**Table 3: Marine Productivity**

	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009
Investigations Started	16	17	8	6	6
Investigations Completed	21	12	8	19	18
Average Duration of Completed Investigations (Number of Days)	881	651	801	936	796
Recommendations	4	6	0	3	2
Safety Advisories	9	5	8	12	7
Safety Information Letters	8	8	8	4	12
Note: Results can fluctuate significantly from year to year due to a number of factors such as staff turnover, the complexity of investigations and the investigation of major occurrences.					

### 2.3.3 Safety Actions Taken

Two marine safety recommendations were issued in 2008-2009.

The Marine Branch reassessed responses to 35 active recommendations issued since 1992. With Board approval, 9 recommendations went from active to inactive status. Of the 26 active recommendations, three (M03-05, M03-06 and M05-04) continue to be assessed as Fully Satisfactory but warrant further monitoring action.

### 2.3.3.1 Marine Recommendations Issued in 2008-2009

Capsizing While Under Tow, Small Fishing Vessel <i>L'Acadien II</i> , 18 nm SE of Cape North, Cape Breton Island, Nova Scotia, 29 March 2008	
Report No. M08M0010	
RECOMMENDATION	<b>M08-04</b>  The Department of Transport include in the proposed Fishing Vessel Safety Regulations adequate measures to ensure that all fishing vessels operating in ice—including those participating in the seal hunt—are structurally suited for their operating environment.
RESPONSE	Transport Canada's response was received and is being assessed.
BOARD ASSESSMENT OF RESPONSE	To be reported next fiscal year
BOARD ASSESSMENT RATING	Pending

RECOMMENDATION	<b>M08-05</b>  The Department of Fisheries and Oceans develops comprehensive safe towing policies, procedures, and practices that take into account all safety risks associated with towing small vessels in ice-infested waters.
RESPONSE	The response from the Department of Fisheries and Oceans was received and is being assessed.
BOARD ASSESSMENT OF RESPONSE	To be reported next fiscal year
BOARD ASSESSMENT RATING	Pending

### 2.3.3.2 Assessment of Responses to Marine Recommendations Issued in 2007-2008

Striking and Subsequent Sinking, Passenger and Vehicle Ferry <i>Queen of the North</i> , Gil Island, Wright Sound, British Columbia, 22 March 2006	
Report No. M06W0052	
<b>RECOMMENDATION</b>	<p><b>M08-01</b></p> <p>The Department of Transport, in conjunction with the Canadian Ferry Operators Association and the Canadian Coast Guard, develop, through a risk-based approach, a framework that ferry operators can use to develop effective passenger accounting for each vessel and route.</p>
<b>RESPONSE</b>	<p>In its letter of 03 June 2008, Transport Canada indicated agreement with the intent of the recommendation.</p> <p>The response indicated that Transport Canada intends to adopt Regulation 27 of Chapter III of the International Convention for the Safety of Life at Sea (SOLAS Convention) in regard to information on passengers as part of Regulatory Reform. This regulatory requirement will be incorporated into the regulation as part of the <i>Canada Shipping Act, 2001</i> Regulatory Reform project.</p> <p>Subsequent to the response, Transport Canada provided a draft and discussion paper of the new proposed Fire and Boat Drill Regulations. In drafting the new regulations, the safety recommendations that were received from the TSB following the <i>Queen of the North</i> accident were taken into account. The intention is that the new regulations will be published in Part I of the <i>Canada Gazette</i> in the spring of 2009.</p>
<b>BOARD ASSESSMENT OF RESPONSE</b>	<p>With the proposed Fire and Boat Drill Regulations, it will become mandatory for passenger vessels to record the number of persons on board and the details respecting all persons who have declared a need for special care or assistance in an emergency.</p> <p>Furthermore, the names and genders of all persons on board the vessel are recorded for unlimited voyages or near coastal voyage, Class 1; a voyage longer than 12 hours; or an overnight voyage on which there is at least one assigned berth. The proposed regulations will cover all passenger vessels except those of 15 gross tonnage or less that carry 12 or fewer passengers and cable ferries.</p>

**Striking and Subsequent Sinking, Passenger and Vehicle Ferry *Queen of the North*, Gil Island, Wright Sound, British Columbia, 22 March 2006**

**Report No. M06W0052**

	<p>The proposed Fire and Boat Drill Regulations will include critical aspects of passenger accounting that go beyond current practices in that the muster list shall contain information in regards to description of duties assigned to crew members to carry out in relation to passengers during an emergency including:</p> <ul style="list-style-type: none"><li>• locating and rescuing passengers who are trapped in their staterooms or who are otherwise unaccounted for during an emergency, and</li><li>• the master of a vessel that carries passengers shall ensure that procedures are in place for locating and rescuing passengers who are trapped in their staterooms or who are otherwise unaccounted for during an emergency.</li></ul>
<b>BOARD ASSESSMENT RATING</b>	Satisfactory Intent

<b>RECOMMENDATION</b>	<p><b>M08-02</b></p> <p>The Department of Transport establish criteria, including the requirement for realistic exercises, against which operators of passenger vessels can evaluate the preparedness of their crews to effectively manage passengers during an emergency.</p>
<b>RESPONSE</b>	<p>In its letter of 03 June 2008, Transport Canada indicated agreement with the intent of the recommendation. On 03 March 2008, BC Ferries submitted a request to Transport Canada to approve training for a Passenger Safety Management course. This course has been evaluated, and approval has been provided as of 21 May 2008.</p>

**Striking and Subsequent Sinking, Passenger and Vehicle Ferry *Queen of the North*, Gil Island, Wright Sound, British Columbia, 22 March 2006**

**Report No. M06W0052**

	<p>In further correspondence with Transport Canada, it was communicated that Transport Canada continues to work with BC Ferries and other Canadian operators to develop emergency drills that could include realistic exercises. Transport Canada continues to monitor BC Ferries and other Canadian operators training for Marine Emergency Duties and passenger safety training. These courses contain emergency drills that include realistic exercises. However, Transport Canada stated that the presence of large groups of people to make the exercise more realistic is difficult to arrange for each course.</p> <p>Subsequent information regarding the proposed amendments to the Fire and Boat Drill Regulations was provided by Transport Canada officials. In regards to drills and realistic exercises, the regulations will require crew members to be assigned specific duties and procedures in place for locating and rescuing passengers who are trapped in their staterooms or who are otherwise unaccounted for during an emergency. To the extent of drills, the master shall ensure that drills, in so far as is feasible, are carried out as if there were an actual emergency. The regulations state that, for fire drills, crew members shall perform the duties assigned to them in connection with the fire drill, including mustering of passengers, locating and rescuing passengers, if any, who are trapped in their staterooms or who are otherwise unaccounted for.</p>
<b>BOARD ASSESSMENT OF RESPONSE</b>	<p>The Board noted in its final report on the <i>Queen of the North</i> that Passenger Safety Management courses based on the provisions of the Training, Certification and Watchkeeping for Seafarers Code (STCW Code), for the most part, involved only classroom instruction. In order for the acquired knowledge to be used as a skill, regular exercises and drills need to be conducted so that crews can be confident and prepared to carry out their emergency duties.</p>

**Striking and Subsequent Sinking, Passenger and Vehicle Ferry *Queen of the North*, Gil Island, Wright Sound, British Columbia, 22 March 2006**

**Report No. M06W0052**

	<p>The Board recognizes the positive intent of the proposed Fire and Boat Drill Regulations on passenger safety, which will have requirements for:</p> <ul style="list-style-type: none"> <li>• drills to be realistic as far as is feasible carried out as if they were the real emergency,</li> <li>• the need for procedures to be in place to locate and rescue passengers and for these procedures to be carried out during drills, and</li> <li>• crews to perform duties during a drill including mustering of passengers.</li> </ul>
<b>BOARD ASSESSMENT RATING</b>	Satisfactory Intent

<b>RECOMMENDATION</b>	<p><b>M08-03</b></p> <p>The Department of Transport extend the requirement for the carriage of voyage data recorders/simplified voyage data recorders to large passenger vessels over 500 gross tonnage and all other commercial vessels on an equivalent basis to those trading internationally.</p>
<b>RESPONSE</b>	<p>In its letter of 03 June 2008, Transport Canada indicated agreement with the general intent of the recommendation. Transport Canada intends to implement domestic carriage requirements for voyage data recorders/simplified voyage data recorders (VDR/S-VDR) for certain domestic commercial vessels.</p> <p>Subsequent information provided by Transport Canada indicated that the proposed Voyage Data Recorder Regulations will provide for the mandatory carriage and annual testing of VDR and/or S-VDR equipment on board certain Canadian passenger vessels and cargo vessels not engaged on international voyages on an equivalent basis to ships required to comply with the requirements of the SOLAS Convention.</p> <p>Pre-publication in Part I of the <i>Canada Gazette</i> is anticipated for the third quarter of 2009. Final approval and publication in Part II of the <i>Canada Gazette</i> is anticipated for the fourth quarter of 2009.</p>

**Striking and Subsequent Sinking, Passenger and Vehicle Ferry *Queen of the North*, Gil Island, Wright Sound, British Columbia, 22 March 2006**

**Report No. M06W0052**

**BOARD ASSESSMENT  
OF RESPONSE**

Although the response indicated Transport Canada's intention to develop and implement the domestic carriage requirements for VDR/S-VDR for certain domestic commercial vessels, it has not specified vessels for which the requirements will be made mandatory. However, the additional information stated the intent of the carriage requirement on an equivalent basis to ships required to comply with the requirements of the SOLAS Convention.

Transport Canada is working toward incorporating this recommendation into regulation and anticipates that pre-publication and publication will be made in the *Canada Gazette* for the third quarter of 2009 and the fourth quarter of 2009 respectively. Any extension of the mandatory VDR/S-VDR carriage requirement will provide significant safety benefits to those operators, and allow investigators increased access to safety information in an increased number of occurrences.

**BOARD ASSESSMENT  
RATING**

Satisfactory Intent

### **2.3.3.3 Other Marine Safety Actions**

The Department of Fisheries and Oceans issued Fleet Circular 07-2008, *Suspension of the Towing of Small Vessels with Persons Onboard While in Ice*. This document instructs masters that, until further notice, all Canadian Coast Guard vessels are directed not to take into tow, while in ice, any small vessels that have persons aboard (TSB investigation report M08M0010).

The Department of Fisheries and Oceans distributed to each pool captain a copy of TSB's Marine Safety Information 11/08, *Stability of Vessels Engaged in Multiple Fishing Operations*, with their herring replacement licence packages. Marine Safety Information 11/08 was sent to Transport Canada, with a copy to the Department of Fisheries and Oceans, informing them of the facts concerning an occurrence involving a vessel engaged in multiple fisheries and reiterating the importance of vessel stability assessments (TSB occurrence M08W0189).

A Canadian ship management company developed and implemented an "Hours of Work Log" form for all shipboard personnel, including vessel masters and chief engineers. The management company also sent a fleet directive to its managed vessels trading into



Ontario Trap Rock facility/Bruce Mines, re-emphasizing the navigational risk associated with Bruce Mines and its approach channel and reinforcing the available mitigating actions to be taken to ensure safe navigation (TSB investigation report M08C0024).

The Flag State of a sail training vessel with its operating base in Canada carried out an audit of the systems and procedures of the vessel. The audit indicated the changes that the operators had made to the vessel and its program as a consequence of the loss of a deckhand. All crew and volunteers are now required to have, as a minimum, basic safety training (TSB investigation report M06F0024).

On fishing vessel safety issues, Transport Canada, in conjunction with WorkSafeBC, held a two-day inter-provincial fishing safety and awareness meeting with provincial and territorial government workplace safety agencies, the Department of Fisheries and Oceans, fishing industry associations, and educational institutions to promote the awareness of educational programs and best practices to improve fishing vessel safety (TSB investigation reports M01L0112 and M02W0147).

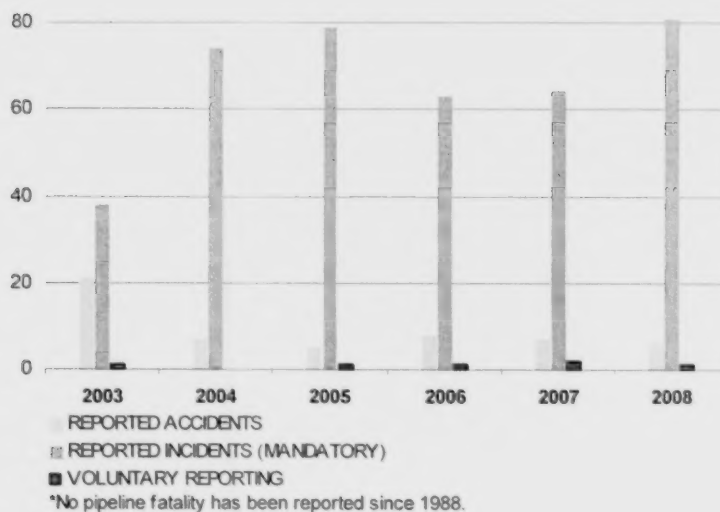
## **2.4 Pipeline Sector**

### **2.4.1 Annual Statistics**

In 2008, 6 pipeline accidents were reported to the TSB, down from the 2007 total of 7 and down from the 2003-2007 average of 10. Estimated pipeline activity decreased 5 per cent from the previous year. The last fatal pipeline accident in the portion of the industry under federal jurisdiction occurred in 1988, and the last accident involving serious injury occurred in 2006.

In 2008, 83 pipeline incidents were reported to the TSB in accordance with the mandatory reporting requirements, up from 64 in 2007 and the five-year average of 64. In all, 78 per cent of those incidents involved uncontained or uncontrolled release of small quantities of gas, oil and high-vapour-pressure products.

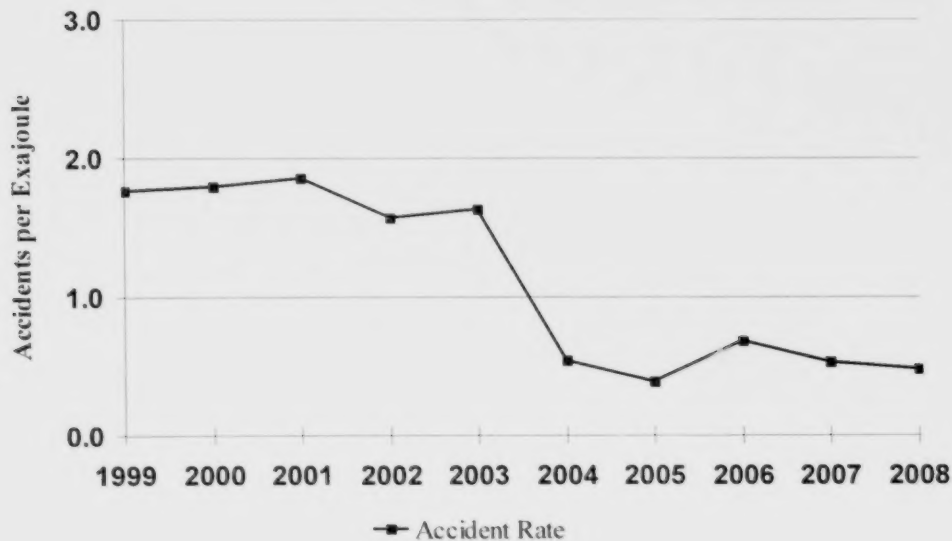
**Figure 6: Pipeline Occurrences**



One indicator of pipeline transportation safety in Canada is the pipeline accident rate.<sup>4</sup> The 2008 rate was 0.5 pipeline accidents per exajoule, unchanged from 2007 and down from the 2003-2007 average of 0.8.

<sup>4</sup> Pipeline accident rates after 2003 reflect the impact of clarifications to the pipeline industry of the TSB's accident and incident reporting requirements, and of internal adjustments to the data in TSB's Pipeline Occurrence Database.

Figure 7: Pipeline Accident Rates



#### 2.4.2 Investigations

In 2008-2009, 1 pipeline investigation was started and 2 investigations were completed. The average duration of completed investigations has increased to 542 days, compared to 489 days in 2007-2008.

Table 4: Pipeline Productivity

	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009
Investigations Started	0	2	1	2	1
Investigations Completed	2	1	1	2	2
Average Duration of Completed Investigations (Number of Days)	1081	922	407	489	542
Recommendations	0	0	0	0	0
Safety Advisories	0	0	0	0	0
Safety Information Letters	0	0	1	0	1
Note: Results can fluctuate significantly from year to year due to a number of factors such as staff turnover, the complexity of investigations and the investigation of major occurrences.					

### **2.4.3 Safety Actions Taken**

A safety information letter was issued in 2008-2009 related to excessive corrosion occurring in cleaning tool sending traps caused by the movement of sour gas streams through the pipeline system.

## **2.5 Rail Sector**

### **2.5.1 Annual Statistics**

A total of 1148 rail accidents were reported to the TSB in 2008, a 13 per cent decrease from the 2007 total of 1323 and a 17 per cent decrease from the 2003-2007 average of 1387. Estimated rail activity decreased by 2 per cent from 2007 and by 2 per cent from the five-year average. The accident rate decreased to 12.6 accidents per million train-miles in 2008 from 14.2 in 2007 and the five-year rate of 14.9. Rail-related fatalities totalled 74 in 2008, down from the 2007 total of 84 and the five-year average of 92.

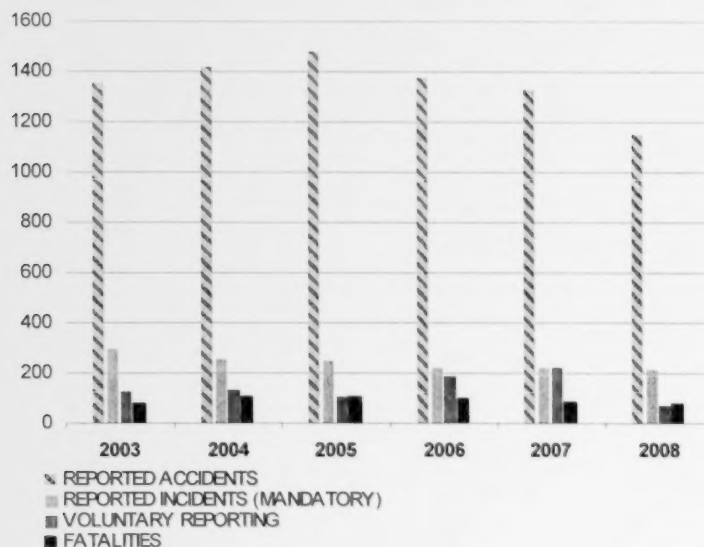
Six main-track collisions occurred in 2008, compared to eight in 2007 and the five-year average of five. In 2008, there were 129 main-track derailments, a decrease of 19 per cent from the 2007 total of 159 and of 20 per cent from the five-year average of 162. Non-main-track derailments decreased to 550 in 2008 from 631 in 2007 and from the five-year average of 700.

In 2008, crossing accidents decreased to 214 from the 2007 total of 221 and from the five-year average of 245. Crossing-related fatalities numbered 26, the same as in 2007 and down from the five-year average of 29. Trespasser accidents decreased by 28 per cent to 73 in 2008 from 101 in 2007, and decreased by 17 per cent over the five-year average of 88. With a total of 47 fatalities in 2008, trespasser accidents continued to account for the majority of rail fatalities.

In 2008, 147 rail accidents involved dangerous goods (this also includes crossing accidents in which the motor vehicle is carrying a dangerous good), down from 190 in 2007 and from the five-year average of 204. Two of these accidents resulted in a release of product.

In 2008, rail incidents reported to the TSB in accordance with the mandatory reporting requirements totalled 215, down from 223 in 2007 and from the five-year average of 248. Movements exceeding limits of authority incidents (111) comprised the largest proportion of the 215 reportable incidents. The second largest proportion was dangerous goods leaker incidents (64).

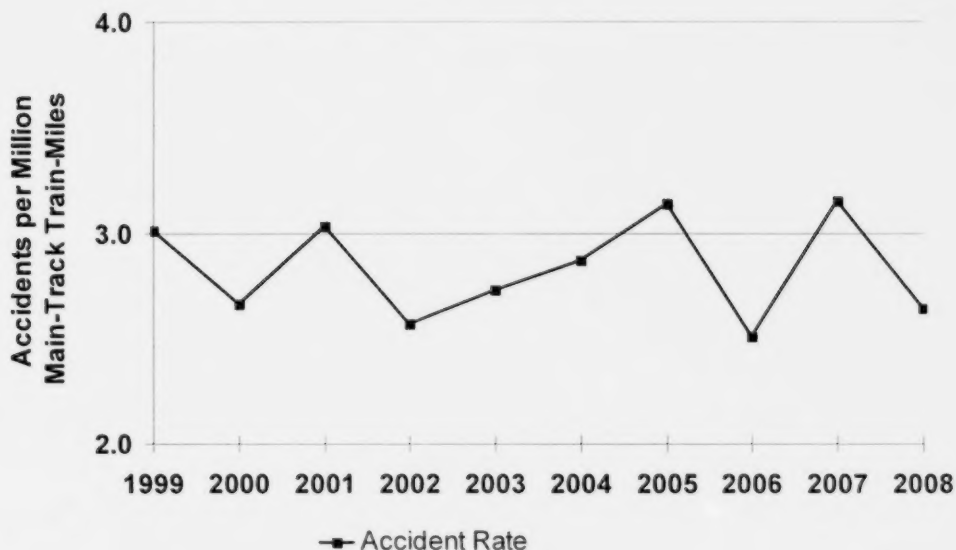
**Figure 8: Rail Occurrences and Fatalities**



One indicator of rail transportation safety in Canada is the main-track accident rate. This rate decreased from 3.1 accidents per million main-track train-miles in 2007 to 2.6 in 2008.<sup>5</sup>

<sup>5</sup> Because accident statistics (derailments since 2001) have been adjusted in light of clarifications to industry of TSB's reporting requirements, historical rail accident rates after 2001 have been updated accordingly.

**Figure 9: Main-Track Accident Rates**



## 2.5.2 Investigations

A total of 11 rail investigations were started in 2008-2009 and 22 investigations were completed. The average duration of completed investigations decreased to 539 days from 697 days in 2007-2008.

**Table 5: Rail Productivity**

	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009
Investigations Started	14	9	18	11	11
Investigations Completed	25	9	12	14	22
Average Duration of Completed Investigations (Number of Days)	618	519	598	697	539
Recommendations	3	0	2	4	2
Safety Advisories	6	9	8	16	11
Safety Information Letters	10	8	2	13	12
Note: Results can fluctuate significantly from year to year due to a number of factors such as staff turnover, the complexity of investigations and the investigation of major occurrences.					

### 2.5.3 Safety Actions Taken

Two rail safety recommendations were issued in 2008-2009.

The Rail Branch reassessed responses to 126 recommendations issued since 1991. With Board approval, 4 recommendations went from active to inactive status and 23 recommendations remained active. The Board's reassessments were communicated to the appropriate change agent(s) for information and action.

#### 2.5.3.1 Rail Recommendations Issued in 2008-2009

<b>Main-Track Derailment, Canadian Pacific Railway Freight Train, Buckskin, Ontario, 31 January 2006</b>	
<b>Report No. R06T0022</b>	
<b>RECOMMENDATION</b>	<b>R08-01</b>  The Department of Transport ensure that all 36-inch Canadian National Transcona wheel shop wheel sets assembled between April 1998 and February 2001 be removed from cars operating in Canada.
<b>RESPONSE</b>	Transport Canada acknowledged the deficiency and issued an Emergency Directive to Canadian National pursuant to section 33 of the <i>Railway Safety Act</i> whereby Canadian National is to identify and remove the said wheel sets from Canadian service by no later than 15 October 2008.
<b>BOARD ASSESSMENT OF RESPONSE</b>	As it is too soon to evaluate the outcome of the efforts of Canadian National and the other North American railways, the Board assesses the response to Board Recommendation R08-01 as having Satisfactory Intent.
<b>BOARD ASSESSMENT RATING</b>	Satisfactory Intent

<b>RECOMMENDATION</b>	<b>R08-02</b>  The Department of Transport ensure that railways adopt procedures and technologies to track all wheel sets.
<b>RESPONSE</b>	Transport Canada acknowledged the deficiency and issued an Emergency Directive to Canadian National whereby Canadian National has been directed to put in place a system to record and track major components such as, but not limited to, wheels, wheel sets, axles, roller bearings, draft gear, and couplers throughout their service life, by no later than 13 December 2008.

<b>Main-Track Derailment, Canadian Pacific Railway Freight Train, Buckskin, Ontario, 31 January 2006</b>	
<b>Report No. R06T0022</b>	
<b>BOARD ASSESSMENT OF RESPONSE</b>	As it is too soon to evaluate the outcome of the efforts of Canadian National and the other North American railways, the Board assesses the response to Board Recommendation R08-02 as having Satisfactory Intent.
<b>BOARD ASSESSMENT RATING</b>	Satisfactory Intent

### 2.5.3.2 Assessment of Responses to Rail Recommendations Issued in 2007-2008

<b>Derailment, Canadian National Freight Train, Wabamun, Alberta, 03 August 2005</b>	
<b>Report No. R05E0059</b>	
<b>RECOMMENDATION</b>	<b>R07-01</b>  The Department of Transport establish minimum standards for the quality and strength of maintenance rails.
<b>RESPONSE</b>	Transport Canada acknowledged the deficiency and indicated that future revisions to the <i>Railway Track Safety Rules</i> will take into consideration the establishment of standards for the quality and strength of maintenance rails.
<b>BOARD ASSESSMENT OF RESPONSE</b>	As it is too soon to evaluate the outcome of Transport Canada's proposal, the Board assesses the response to Board Recommendation R07-01 as having Satisfactory Intent.
<b>BOARD ASSESSMENT RATING</b>	Satisfactory Intent

<b>RECOMMENDATION</b>	<b>R07-02</b>  The Department of Transport establish standards requiring that rails approaching their fatigue limit be replaced.
<b>RESPONSE</b>	Transport Canada acknowledged the deficiency and indicated that future revisions to the <i>Railway Track Safety Rules</i> will take into consideration the establishment of standards for rails approaching their fatigue limit.



<b>Derailment, Canadian National Freight Train, Wabamun, Alberta, 03 August 2005</b>	
<b>Report No. R05E0059</b>	
<b>BOARD ASSESSMENT OF RESPONSE</b>	As it is too soon to evaluate the outcome of Transport Canada's proposal, the Board assesses the response to Board Recommendation R07-02 as having Satisfactory Intent.
<b>BOARD ASSESSMENT RATING</b>	Satisfactory Intent

<b>Main-Track Derailment, Canadian National Train, Saint-Henri-de-Lévis, Quebec, 17 August 2004</b>	
<b>Report No. R04Q0040</b>	
<b>RECOMMENDATION</b>	<b>R07-03</b>  The Department of Transport and the railway industry conduct in-depth studies on the behaviour of saturated organic materials under cyclic loading.
<b>RESPONSE</b>	Transport Canada acknowledged the deficiency and indicated that an in-depth study of the behaviour of saturated organic materials under cyclic loading will be conducted.
<b>BOARD ASSESSMENT OF RESPONSE</b>	As it is too soon to evaluate the outcome of Transport Canada's efforts, the Board assesses the response to Recommendation R07-03 as having Satisfactory Intent.
<b>BOARD ASSESSMENT RATING</b>	Satisfactory Intent

<b>RECOMMENDATION</b>	<b>R07-04</b>  The Department of Transport extend the safety provisions of the construction standards applicable to 286 000-pound cars to all new non-pressurized tank cars carrying dangerous goods.
<b>RESPONSE</b>	Transport Canada acknowledged the deficiency and indicated that it is following up with tank car stakeholders North America-wide.
<b>BOARD ASSESSMENT OF RESPONSE</b>	As it is too soon to evaluate the outcome of the efforts of Transport Canada and the other stakeholders, the Board assesses the response to Board Recommendation R07-04 as having Satisfactory Intent.
<b>BOARD ASSESSMENT RATING</b>	Satisfactory Intent

### 2.5.3.3 Other Rail Safety Actions

The United States Federal Railroad Administration and the North American railway industry's "Next Generation Tank Car" project has resulted in the issuance of a final rule improving the safety of rail tank cars that carry poisonous by inhalation materials such as chlorine and anhydrous ammonia. The improvements increase rail hazardous material car crashworthiness over existing design standards (TSB investigation report R04Q0040).

Transport Canada initiated a new Community and Partnership Outreach Program with the objective of promoting safety at railway crossings and addressing the problem of trespassing incidents and crossing collisions within communities. Emphasis has been put on pedestrian crossings near industries and schools, particularly elementary schools (TSB Rail Safety Advisory 06/08).

Transport Canada conducted a crossing accident site follow-up with the Renfrew County Road Authority and the Ottawa Valley Railway concerning the installation of the advanced warning sign WA-18L, advanced pavement markings, and LED lights on the automatic warning devices (TSB occurrence R08H0030 and Rail Safety Information 08/08).

Canadian Pacific Railway enhanced its location-specific General Operating Instructions relating to the locking of locomotive cab after completing 1398 locomotive inspections to ensure that the locking and latching mechanisms of cab doors and windows were operable (TSB Rail Safety Advisory 06/07).

The Association of American Railroads revised Section G, Part II (Wheel and Axle Manual) of the *Manual of Standards and Recommended Practices* and Section 1.1.8 of Standard S-659 (Axles – General Practices) to include the requirement for wet particle testing of the journal fillet area before the mounting of the roller bearings on those axles that do not require the removal of the wheels (TSB investigation report R07T0240 and Rail Safety Advisory 01/08).

Transport Canada issued an emergency directive pursuant to section 33 of the *Railway Safety Act* to Canadian National to identify and remove certain suspect defective wheel sets manufactured by Canadian National's wheel shops from Canadian service (TSB investigation report R06T0022).

The Association of American Railroads revised the *Manual of Standards and Recommended Practices*, Section G, Part II (Wheel and Axle Manual), RP-631, Part 2.3.3 (Wheel Mounting Record Retention), mandating that records of the marking of wheels and axles and the pressures of wheel mountings be kept on file for a minimum of 10 years (TSB investigation report R06T0022).

Transport Canada conducted a review of Canadian National's rail failures at exothermic connections and thermite welds, including a comparison of track defects over the past three years involving thermite welds, and reviewed Canadian National's field procedures for thermite welding and installation of exothermic track connections (TSB Rail Safety Advisory 02/08).

Transport Canada conducted an audit of inspection procedures on the Chemin de fer de la Matapédia et du Golfe inc. and conducted an inspection on part of the Mont-Joli Subdivision. Transport Canada found some deficiencies related to the Safety Management System. It issued a Notice on 18 July 2008 pursuant to subsection 31(1) of the *Railway Safety Act* and followed up on its findings on site (TSB occurrence R08M0015 and Rail Safety Advisory 04/08).

Further to the December 2007 Ministerial Order, which ordered that specified federally regulated railway companies formulate a rule requiring minimum qualification standards for specified railway industry employees, Transport Canada extended the date for filing said rules by four months, which allowed specified federally regulated railway companies to file said rule with the Minister on or before 21 February 2009 (TSB Rail Safety Advisory 12/07).

VIA Rail Canada Inc. issued Notice HQ09-02 to all its locomotive engineers containing revised instructions to clarify and provide a guideline on performance of brake tests using stabilization and leakage test methods (TSB Rail Safety Advisory 02/09).

Transport Canada issued a Notice and a Notice and Order to OmniTRAX with reference to train handling instructions and practices on the Kettle Falls International Railway in British Columbia (TSB occurrence R08V0270).

Transport Canada followed up with VIA Rail Canada Inc. on new procedures for and inspections of all brake pipe cut-out cocks on passenger coaches. Transport Canada asked VIA to equip all its passenger trains with end-of-train technology similar to that which freight trains are required to have (TSB occurrence R08T0142 and Rail Safety Advisory 05/08).

Canadian Pacific Railway amended its wording of *Canadian Rail Operating Rules* Rule 303.1(c) and (e) to enhance the applicable protocols related to communications and recording in writing. Speed restrictions were introduced so that the closing-up train must not enter the limits of the other train at more than 15 mph and be prepared to stop short of the preceding train or transfer (TSB investigation report R08W0058).

Transport Canada Rail Safety inspectors reviewed brake testing procedures and training records of car inspectors after a report of safety deficiencies in the brake systems of cars interchanged into the United States. Canadian National issued a bulletin to car inspectors as a reminder to ensure proper inspection of brake rigging during air brake tests (TSB Rail Safety Information 04/08).

## 2.6 Air Sector

### 2.6.1 Annual Statistics

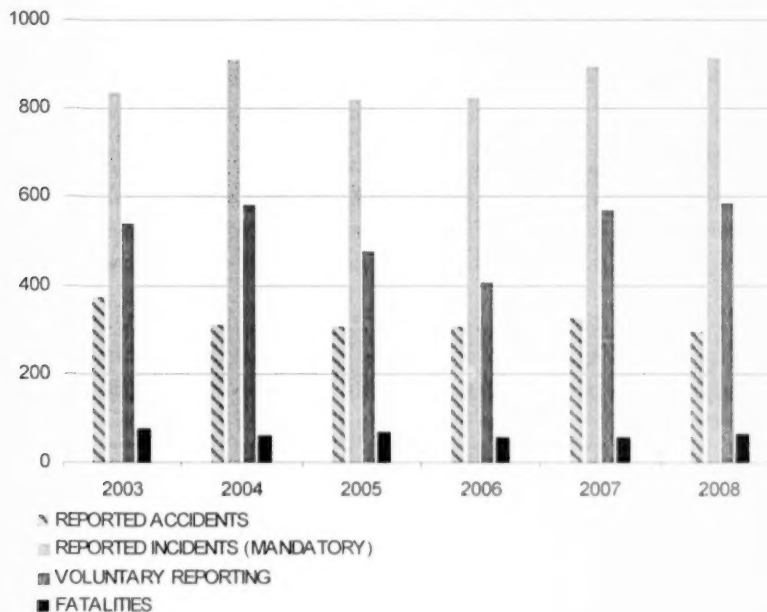
Canadian-registered aircraft, other than ultralights, were involved in 251 reported accidents in 2008, a 12 per cent decrease from the 2007 total of 284 and a 7 per cent decrease from the 2003-2007 average of 270. The estimate of flying activity for 2008 is 4 432 000 hours, yielding an accident rate of 5.5 accidents per 100 000 flying hours, down from the 2007 rate of 6.6 and from the five-year rate of 6.7. Canadian-registered aircraft, other than ultralights, were involved in 25 fatal occurrences with 50 fatalities in 2008, comparable to the 33 fatal occurrences with 49 fatalities in 2007 and the five-year average of 31 fatal occurrences with 50 fatalities. A total of 9 fatal occurrences involved commercial aircraft (3 aeroplanes and 6 helicopters), and 10 of the remaining 16 fatal occurrences involved privately operated aeroplanes.

The number of accidents involving ultralights decreased to 29 in 2008 from 30 in 2007, but the number of fatal accidents increased to 12 in 2008 from 5 in 2007.

The number of foreign-registered aircraft accidents in Canada increased to 15 in 2008 from 10 in 2007. There were no fatal accidents in 2008 or in 2007.

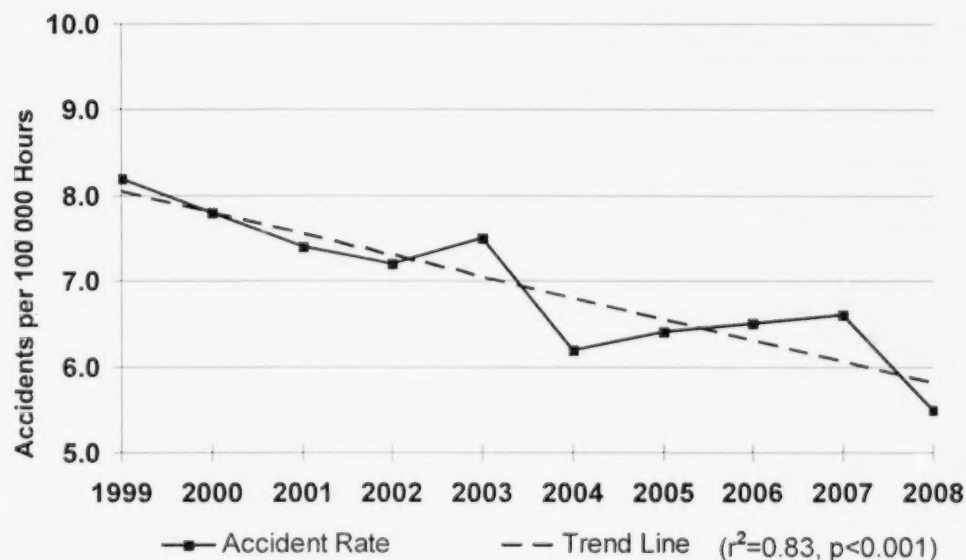
In 2008, a total of 914 incidents were reported to the TSB in accordance with the mandatory reporting requirements. This represents a 2 per cent increase from the 2007 total of 895 and a 7 per cent increase from the 2003-2007 average of 857.

**Figure 10: Air Occurrences and Fatalities**



One indicator of air transportation safety in Canada is the accident rate for Canadian-registered aircraft. In 2008, this rate decreased to 5.5 accidents per 100 000 hours from the 2007 rate of 6.6, and was below the five-year average of 6.7. The trend line shows a significant downward trend over the past 10 years.

**Figure 11: Canadian-Registered Aircraft Accident Rates**



### 2.6.2 Investigations

A total of 43 air investigations were started in 2008-2009 and 46 investigations were completed. This represents a decrease in the number of investigations completed compared to the previous year (47). The average duration of completed investigations has decreased to 430 days, compared to 493 days the year before.

**Table 6: Air Productivity**

	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009
Investigations Started	44	50	41	49	43
Investigations Completed	67	53	36	47	46
Average Duration of Completed Investigations (Number of Days)	524	404	516	493	430
Recommendations	4	6	4	11	1
Safety Advisories	9	7	16	13	13
Safety Information Letters	6	5	12	9	8
Note: Results can fluctuate significantly from year to year due to a number of factors such as staff turnover, the complexity of investigations and the investigation of major occurrences.					

## 2.6.3 Safety Actions Taken

One air safety recommendation was issued in 2008-2009. The response has been received and it is being assessed.

The Air Branch reassessed responses to 28 recommendations issued in previous years. With Board approval, 5 recommendations went from active to inactive status. At the end of fiscal year 2008-2009, there were 38 active recommendations. The Board's reassessments were communicated to the appropriate change agent(s) for information and action.

### 2.6.3.1 Air Recommendations Issued in 2008-2009

<b>Mid-Air Collision between a Cessna 172P and a Cessna 182T, Caledon, Ontario, 1 nm W, 04 August 2006</b>	
<b>Report No. A06O0206</b>	
<b>RECOMMENDATION</b>	<b>A08-03</b>  The Department of Transport, in coordination with NAV CANADA, take steps to substantially reduce the risk of collision between visual flight rules aircraft operating in Class E airspace surrounding the Toronto/Lester B. Pearson International Airport.
<b>RESPONSE</b>	Transport Canada's response was received in September 2008 and is being assessed.

<b>Mid-Air Collision between a Cessna 172P and a Cessna 182T, Caledon, Ontario, 1 nm W, 04 August 2006</b>	
<b>Report No. A06O0206</b>	
<b>BOARD ASSESSMENT OF RESPONSE</b>	To be reported next fiscal year
<b>BOARD ASSESSMENT RATING</b>	Pending

### 2.6.3.2 Assessment of Responses to Air Recommendations Issued in 2007-2008

<b>Runway Overrun and Fire, Air France, Airbus A340-313, Toronto/Lester B. Pearson International Airport, Ontario, 02 August 2005</b>	
<b>Report No. A05H0002</b>	
<b>RECOMMENDATION</b>	<p><b>A07-01</b></p> <p>The Department of Transport establish clear standards limiting approaches and landings in convective weather for all air transport operators at Canadian airports.</p>
<b>RESPONSE</b>	<p>In its response, Transport Canada states that it will consider this recommendation in consultation with other international aviation authorities with a view to harmonizing any regulatory initiatives that may result from this recommendation. In addition, Transport Canada is preparing an issue paper on this subject, to be presented at the next International Civil Aviation Organization (ICAO) Standard and Recommended Procedures Working Group meeting in Montréal, Quebec, scheduled for summer 2008.</p> <p>In the short term, Transport Canada will consider issuing an Advisory Circular that will discuss the hazards associated with flight operations in or near convective weather conditions. This Advisory Circular would recommend that Canadian air operators include specific procedures in their company operations manual that would guide flight crew members in alerting the crew of the current weather and associated hazards, as well as to provide guidance in decision making when faced with flight through or landing in such weather conditions.</p>



**Runway Overrun and Fire, Air France, Airbus A340-313,  
Toronto/Lester B. Pearson International Airport, Ontario, 02 August 2005**

**Report No. A05H0002**

<b>BOARD ASSESSMENT OF RESPONSE</b>	<p>Although Transport Canada does not specifically state that it fully supports this recommendation, it intends to conduct consultations with international authorities to harmonize an action plan. In addition, it is preparing an issue paper, to be presented at the upcoming ICAO Standard and Recommended Procedures Working Group meeting. Transport Canada is also considering issuing an Advisory Circular to Canadian air operators that will discuss the hazards associated with flight operations in or near convective weather conditions.</p> <p>This response is a positive indication that Transport Canada believes that more needs to be done, both internationally as well as domestically, to reduce the risk identified in this recommendation. However, the Board believes that, in the short term, and until more stringent standards are established, the risk will remain.</p>
<b>BOARD ASSESSMENT RATING</b>	Satisfactory Intent

<b>RECOMMENDATION</b>	<p><b>A07-02</b></p> <p>France's Direction Générale de l'Aviation Civile and other civil aviation authorities establish clear standards limiting approaches and landings in convective weather.</p>
<b>RESPONSE</b>	<p>Although it would be preferable to have clear standards limiting approaches in convective weather, defining and implementing those standards would require long-range work internationally because the decision criteria should be standardized throughout the countries. Instead of working on defining standards limiting approaches in convective weather, the Direction Générale de l'Aviation Civile is examining short-term and long-term alternative measures to better assist crew members in making decisions.</p>



**Runway Overrun and Fire, Air France, Airbus A340-313,  
Toronto/Lester B. Pearson International Airport, Ontario, 02 August 2005**

**Report No. A05H0002**

	<p>The Direction Générale de l'Aviation Civile is putting in place a work structure to better assist crew members and to give them the most adapted and accurate, timely information. That structure includes the organization that can transmit the information (air traffic control or airline operations) as well as the support used (speech or data link). The problematic associated with a more active decision-making assistance (suggestion to divert and even temporary closure of airport) will also be discussed in the framework.</p> <p>The Direction Générale de l'Aviation Civile also intends to specifically implement a crisis centre for severe convective weather. That centre could establish partial or full limitations for the flow of departures and arrivals on the basis of the changing situation.</p>
<b>BOARD ASSESSMENT OF RESPONSE</b>	To be reported next fiscal year
<b>BOARD ASSESSMENT RATING</b>	Pending

<b>RECOMMENDATION</b>	<p><b>A07-03</b></p> <p>The Department of Transport mandate training for all pilots involved in Canadian air transport operations to better enable them to make landing decisions in deteriorating weather.</p>
<b>RESPONSE</b>	<p>In its response, Transport Canada indicates that, although the criticality of proper decision making with respect to landing decisions in deteriorating weather cannot be discounted, there are other elements for which proper decision making is equally critical. Transport Canada states that it will include a training requirement for pilots operating under Subparts 703, 704 and 705 of the <i>Canadian Aviation Regulations</i> (CARs) to better enable them to make operational decisions when flying into or in the vicinity of deteriorating or challenging weather.</p>

**Runway Overrun and Fire, Air France, Airbus A340-313,  
Toronto/Lester B. Pearson International Airport, Ontario, 02 August 2005**

**Report No. A05H0002**

<b>BOARD ASSESSMENT OF RESPONSE</b>	This response indicates that Transport Canada believes that a sound pilot decision-making process is critical to the safety of flight, not only when in the vicinity of thunderstorms, but also in other phases of flight. The Board does not disagree with this statement. Transport Canada states that it will include a decision-making training requirement for pilots operating under Subparts 703, 704 and 705 of the CARs. This action should assist pilots in recognizing the dangers of conducting approaches in rapidly deteriorating weather conditions such as observed in the vicinity of thunderstorms. However, until such proposed action is implemented, the risk will remain.
<b>BOARD ASSESSMENT RATING</b>	Satisfactory Intent

<b>RECOMMENDATION</b>	<b>A07-04</b>  France's Direction Générale de l'Aviation Civile and other civil aviation authorities mandate training for air transport pilots to better enable them to make landing decisions in deteriorating weather.
<b>RESPONSE</b>	For optimum decision making, the crew must mainly have the most accurate information at the right time, and the Direction Générale de l'Aviation Civile thinks that improvements are possible in that field, as indicated in its response to Recommendation A07-02.  The Direction Générale de l'Aviation Civile intends to extend its classroom training on cockpit resource management, threat and error management, and skills development to other types of training for instructor licensing and qualifications so that a pilot be aware of that information at different stages of the training. The Direction Générale de l'Aviation Civile is also making the examiners aware of these concepts. Similar action in Europe is expected.

**Runway Overrun and Fire, Air France, Airbus A340-313,  
Toronto/Lester B. Pearson International Airport, Ontario, 02 August 2005**

**Report No. A05H0002**

	<p>The Direction Générale de l'Aviation Civile pointed out that the technical elements needed by crews when conditions deteriorate are a better awareness of precautionary landings and a better understanding of actual braking performance. Consequently, the Direction Générale de l'Aviation Civile intends to make these drills mandatory in the training and routine inspections.</p> <p>It is also generally appropriate to talk about the desirable and positive aspect of the go-around decision, as did the Direction Générale de l'Aviation Civile in its work and publications relating to unstabilized approaches.</p>
<b>BOARD ASSESSMENT OF RESPONSE</b>	To be reported next fiscal year
<b>BOARD ASSESSMENT RATING</b>	Pending

<b>RECOMMENDATION</b>	<p><b>A07-05</b></p> <p>The Department of Transport and other civil aviation authorities require crews to establish the margin of error between landing distance available and landing distance required before conducting an approach into deteriorating weather.</p>
<b>RESPONSE</b>	<p>In its response to this recommendation, Transport Canada states that, subsequent to the 1992 Final Report of the Commission of Inquiry into the Air Ontario Crash at Dryden, Ontario, it conducted extensive research and testing on winter runway surfaces. Through the Canadian Aviation Regulation Advisory Council, three working groups were convened and six Notices of Proposed Amendment (NPAs) regarding aeroplane performance on wet and contaminated runways were approved. None of the proposed amendments have come into force as of yet, as they continue to undergo regulatory review with the Department of Justice.</p>

**Runway Overrun and Fire, Air France, Airbus A340-313,  
Toronto/Lester B. Pearson International Airport, Ontario, 02 August 2005**

**Report No. A05H0002**

Transport Canada is of the opinion that, once in force, the NPAs will accomplish the following:

1. There will be a new CAR Subpart 705 regulation, requiring the pilot-in-command to determine that sufficient landing distance is available prior to conducting an approach to land, taking into consideration the condition of the runway surface.
2. CAR Subpart 725 standards will be amended to include:
  - an information note concerning aeroplane flight manual (AFM) landing performance on dry, wet and contaminated runways that states:

Refer to guidance material on the determination of dry, wet and contaminated runway landing performance data. Achieving the *Aeroplane Flight Manual* landing distance on a dry runway is not likely attainable in operational service. Published landing distance data on wet or contaminated runways may need to be adjusted to account for operational variables.

- the definition of "runway" as it pertains to this division,
- take-off and landing performance on a dry runway,
- take-off and landing performance on a damp runway,
- take-off and landing performance on a wet runway, and
- landing performance on a contaminated runway.

**Runway Overrun and Fire, Air France, Airbus A340-313,  
Toronto/Lester B. Pearson International Airport, Ontario, 02 August 2005**

**Report No. A05H0002**

	<p>3. CAR Section 705.61, Dispatch Limitations: Wet Runway – Turbo-jet-powered Aeroplanes, is currently meant to apply to paved, hard-surfaced runways (that is, asphalt and concrete). This regulation will be amended to indicate that it applies to:</p> <ul style="list-style-type: none"> <li>• both wet and contaminated runways,</li> <li>• paved hard-surfaced runways (that is, asphalt and concrete), and</li> <li>• all turbine-powered (turbo-jet and turbo-prop) aeroplanes operated under CAR 705.</li> </ul> <p>In summary, when these amendments to the CARs come into force, CAR 705 air operators and their flight crews will be required to determine that sufficient landing distance is available prior to conducting an approach to land, taking into consideration the condition of the runway surface (dry, damp, wet, or contaminated) resulting from deteriorating weather.</p>
<b>BOARD ASSESSMENT OF RESPONSE</b>	<p>The Board is confident that the proposed NPAs described above will, if approved, substantially reduce or eliminate the safety deficiency. However, to date, the action has not been sufficiently advanced to reduce the risks to transportation safety. The proposed NPA regulation work has been ongoing for a number of years, but it is unknown when these NPAs may be approved, or whether there may be significant changes before they come into force. The Board was looking for a more aggressive attention to this deficiency because a number of recent runway overruns such as the one involving One-Two-Go Flight 269 in Phuket, Thailand, on 16 September 2007 are a clear indication that runway overruns from contaminated runways will continue to occur, unless crews know exactly what their margin for error is.</p>
<b>BOARD ASSESSMENT RATING</b>	Satisfactory Intent

**Runway Overrun and Fire, Air France, Airbus A340-313,  
Toronto/Lester B. Pearson International Airport, Ontario, 02 August 2005**

**Report No. A05H0002**

<b>RECOMMENDATION</b>	<p><b>A07-06</b></p> <p>The Department of Transport require all Code 4 runways to have a 300 m runway end safety area (RESA) or a means of stopping aircraft that provides an equivalent level of safety.</p>
<b>RESPONSE</b>	<p>In its response to this recommendation, Transport Canada states that it is currently working with industry experts to review airport certification standards.</p> <p>The review of TP 312, Aerodrome Standards and Recommended Practices, has resulted in a recommendation to harmonize the Canadian standards with the current RESA standards beyond the runway strip end contained in Annex 14 – Aerodromes of ICAO. The result of this review will be subject to the Canadian Aviation Regulation Advisory Council regulatory consultation process.</p>
<b>BOARD ASSESSMENT OF RESPONSE</b>	To be reported next fiscal year
<b>BOARD ASSESSMENT RATING</b>	Pending

<b>RECOMMENDATION</b>	<p><b>A07-07</b></p> <p>The Department of Transport require that passenger safety briefings include clear direction to leave all carry-on baggage behind during an evacuation.</p>
<b>RESPONSE</b>	<p>Transport Canada agrees with the recommendation and will propose an amendment to the CARs to require that passenger safety briefings include direction to leave all carry-on baggage behind during an evacuation. The proposed amendment will be subject to the normal Canadian Aviation Regulation Advisory Council regulatory consultation process.</p>

**Runway Overrun and Fire, Air France, Airbus A340-313,  
Toronto/Lester B. Pearson International Airport, Ontario, 02 August 2005**

**Report No. A05H0002**

<b>BOARD ASSESSMENT OF RESPONSE</b>	Transport Canada agrees with this recommendation, and intends to propose an amendment to the present regulations in line with the text of the recommendation. The proposed action will not have any effect in the short term because any amendment to the CARs is a long process. However, this intended action, if implemented, will fully meet the intent of this recommendation. In the short term, direct liaison on the part of the regulator with Canadian airline operators to recommend improvements in their safety briefing practices with respect to emergency evacuations would also achieve the aim of the recommendation.
<b>BOARD ASSESSMENT RATING</b>	Satisfactory Intent

**Engine Power Loss – Forced Landing, Sonicblue Airways, Cessna 208B (Caravan),  
Port Alberni, British Columbia, 21 January 2006**

**Report No. A06P0010**

<b>RECOMMENDATION</b>	<b>A07-08</b>  The Department of Transport take into account all propulsion system failures when assessing the safety of single-engine commercial operations.
<b>RESPONSE</b>	To address this and other safety issues related to Canadian single-engine instrument flight rules (SEIFR) operations, Transport Canada will undertake a complete review of the CARs relating to commercial SEIFR operations.
<b>BOARD ASSESSMENT OF RESPONSE</b>	To be reported next fiscal year
<b>BOARD ASSESSMENT RATING</b>	Pending

**Hydraulic Flight Control Malfunction, Vancouver Island Helicopters, Eurocopter AS 350 B2 (Helicopter), Kamarang, Guyana, 06 February 2005**

**Report No. A05F0025**

<b>RECOMMENDATION</b>	<b>A07-09</b>  The European Aviation Safety Agency, in coordination with other involved regulatory authorities and industry, ensure that the AS 350 helicopter hydraulic cut-off (HYD CUT OFF) switch is capable of handling the inductive electrical load of the circuit.
<b>RESPONSE</b>	Awaiting response
<b>BOARD ASSESSMENT OF RESPONSE</b>	To be reported next fiscal year
<b>BOARD ASSESSMENT RATING</b>	Pending

**Hard Landing – Fuel Leak and Fire, Sundance Balloons International, FireFly 12B Hot Air Balloon, Winnipeg, Manitoba, 15 nm NE, 11 August 2007**

**Report No. A07C0151**

<b>RECOMMENDATION</b>	<b>A08-01</b>  The Department of Transport ensure that passenger-carrying commercial balloon operations provide a level of safety equivalent to that established for other aircraft of equal passenger-carrying capacity.
<b>RESPONSE</b>	To address the subject of the level of equivalent safety of passenger-carrying commercial balloon operations, Transport Canada is conducting a risk assessment of commercial passenger-carrying balloon operations. This study will address the special flight operations certificate process and commercial passenger-carrying balloon operation oversight. Once the review is complete, should regulatory changes be required, Notice of Proposed Amendments will be developed and submitted to the Canadian Aviation Regulation Advisory Council for consultation.



**Hard Landing – Fuel Leak and Fire, Sundance Balloons International,  
FireFly 12B Hot Air Balloon, Winnipeg, Manitoba, 15 nm NE, 11 August 2007**

**Report No. A07C0151**

<b>BOARD ASSESSMENT OF RESPONSE</b>	Transport Canada's response to the recommendation indicates that it intends to conduct a risk assessment and determine an appropriate means of addressing the issue of commercial passenger-carrying balloon operations. This study will address both the special flight operations certificate process and commercial passenger-carrying balloon operation oversight. Once the review is complete, regulatory changes will be proposed should they be considered necessary. However, the Board believes that Transport Canada's proposed review and regulatory amendment process will not yield any specific course of action that, in the short term, would reduce or eliminate the deficiency identified in Board Recommendation A08-01.
<b>BOARD ASSESSMENT RATING</b>	Satisfactory Intent

<b>RECOMMENDATION</b>	<b>A08-02</b>  The Department of Transport ensure that balloons carrying fare-paying passengers have an emergency fuel shut-off.
<b>RESPONSE</b>	To address the proposed emergency fuel shut-off for balloons carrying fare-paying passengers, Transport Canada is conducting a risk assessment to determine whether regulatory or non-regulatory solutions would be appropriate to address this issue. Once the review is complete, should regulatory changes be required, Notice of Proposed Amendments will be developed and submitted to the Canadian Aviation Regulation Advisory Council for consultation.

<b>Hard Landing – Fuel Leak and Fire, Sundance Balloons International, FireFly 12B Hot Air Balloon, Winnipeg, Manitoba, 15 nm NE, 11 August 2007</b>	
<b>Report No. A07C0151</b>	
<b>BOARD ASSESSMENT OF RESPONSE</b>	Transport Canada's response to the recommendation indicates that it intends to conduct a risk assessment and determine an appropriate means of addressing the issue of the proposed emergency fuel shut-off for balloons carrying fare-paying passengers. Once the review is complete, regulatory changes will be proposed should they be considered necessary. However, the Board believes that Transport Canada's proposed review and regulatory amendment process will not yield any specific course of action that, in the short term, would reduce or eliminate the deficiency identified in Board Recommendation A08-02.
<b>BOARD ASSESSMENT RATING</b>	Satisfactory Intent

### 2.6.3.3 Other Air Safety Actions

During a Class 5 occurrence (A08O0337), a discrepancy on the Jeppesen Taxiing Chart for Toronto/Lester B. Pearson International Airport (CYYZ Chart 10-9) was noted showing that Taxiway Delta is depicted on the chart as being the same width on the southeast side of the button of Runway 06L as it is entering Runway 06L on the northwest. In fact, Taxiway Delta is much narrower on the opposite side of Runway 06L because the holding bay width is not continued. Jeppesen immediately modified the chart when notified by an e-mail.

As part of another Class 5 occurrence (A08C0004), a fracture was identified in an aircraft nose landing gear drag brace. Without the TSB having to conduct a formal investigation, the TSB supplied the aircraft manufacturer with the safety deficiency and the manufacturer advised that it:

- believed that the problem was fatigue related, driven by retraction cycle hydraulic loads and rigging tolerances;
- had a new, redesigned part in manufacture, both for new aircraft and in-service parts; and
- had a new aircraft maintenance manual procedure written to conduct ongoing ultrasound inspections of the part, and to replace it if cracked.

Following a runway overrun accident investigation (A07A0029) at Gander International Airport, Newfoundland and Labrador, Volga-Dnepr Airlines developed an in-house dedicated safety assurance program for the company's intensive flight operations via Gander Airport for the 2007-2008 season.

As a result of a TSB investigation (A07W0072) into a loss of separation in Alberta airspace, the NAV CANADA Edmonton Area Control Centre began a project to vertically split the airspace over Alberta and Northern British Columbia. The airspace change resulted in reduced workload, frequency congestion, and complexity.

Following a mid-air collision (A06O0206) near Brampton, Ontario, NAV CANADA independently initiated an Airspace and Services Review in the Montréal-Toronto-Windsor corridor.

A helicopter accident investigation (A08P0244) found that a cover (doghouse cover), over the engine intake and around the main rotor control system was not removed before flight. The helicopter crashed, and there were four fatalities. The cover did not have any straps or physical barriers that fall at or below human eye level. Once the pilot got into the helicopter, there were no visual cues of the cover's installation.

Following the accident, Prism Helicopters required that blade tie-downs be installed whenever the doghouse cover is installed. Also, the covers were modified with tape/straps that hang down and are to be placed in the front doors. The manufacturer of the doghouse cover (Aerospace Filtration Systems Inc.) took safety action in modifying the cover to make it more visible to crew inside the helicopter.

Following a Northwestern Air Lease Limited Jetstream 3212 runway overrun investigation (A08W0001), the company instituted an enhanced pilot training program emphasizing crew resource management, conducting stabilized approaches, decision making regarding go-arounds, and airspeed control on approaches. In addition, quick reference charts featuring required landing distance were placed in company Jetstream cockpits, and required landing distance was to be included in pre-landing briefings.

## Appendix A – Reports Released by the TSB in 2008-2009 by Sector

### Marine Reports Released in 2008-2009

DATE	LOCATION	VESSEL(S)	TYPE	EVENT	REPORT NO.
2005.03.29	Off the Magdalen Islands, Que.	<i>Justin M</i>	Fishing	Ice damage and subsequent sinking	M05L0036
2005.07.19	South Shore Canal, St. Lawrence Seaway, Que.	<i>Jo Spirit Orla</i>	Tanker Bulk carrier	Collision	M05C0033
2005.09.26	Deschailions-sur-Saint-Laurent, Que.	<i>Canadian Leader</i>	Bulk carrier	Grounding	M05L0203
2005.09.26	Lac Saint-Pierre, Que.	<i>Cast Prosperity Hyde Park</i>	Container Tanker	Collision	M05L0205
2005.10.28	St. Marys River, Ont.	<i>Michipicoten</i>	Bulk carrier	Grounding	M05C0063
2006.03.08	Near Qualicum Beach, B.C.	<i>B.C. Safari</i>	Small fishing	Sinking and loss of life	M06W0039
2006.04.08	Conception Bay South, N.L.	<i>Kometik</i>	Shuttle tanker	Fire in cargo oil tank	M06N0014
2006.05.22	Bay of Sept-Îles, Que.	<i>Sea Urchin</i>	Bulk carrier	Accidental release of lifeboat and loss of life	M06L0063
2006.09.17	Notre Dame Bay, N.L.	<i>Lannie &amp; Sisters II</i>	Small fishing	Sinking with loss of life	M06N0074
2006.10.02	Welland Canal, St. Catharines, Ont.	<i>Petite Forte St. Mary's Cement</i>	Pusher tug Barge	Striking of lock arrester cable	M06C0058
2006.10.13	Oshawa, Ont.	<i>Seneca Jerry G Escorte</i>	Bulk carrier Tug Tug	Bottom contact and striking	M06C0061
2006.10.29	Off Bas-Caraquet, N.B.	<i>OTM 3072</i>	Barge	Capsizing	M06M0110
2006.11.01	King's Point, Green Bay, N.L., 2.4 nm NE	<i>Cape Fin-Tose</i>	Small fishing	Capsizing and sinking	M06N0082
2006.12.08	Lunenburg, N.S., 376 nm SSE	<i>Picton Castle</i>	Sail training	Crew member lost overboard	M06F0024
2007.11.04	Newman Sound, N.L.	<i>Sea Urchin</i>	Small fishing	Capsizing and loss of life	M07N0117
2007.11.13	Bay of Fundy, N.B.	<i>Big Sister</i>	Small fishing	Capsizing with loss of life	M07M0088
2008.03.29	Cape North, Cape Breton Island, N.S., 18 nm SE	<i>Acadien II</i>	Small fishing	Capsizing while under tow	M08M0010

DATE	LOCATION	VESSEL(S)	TYPE	EVENT	REPORT NO.
2008.05.28	Lake Huron, Ont.	<i>Algomarine</i>	Bulk carrier	Grounding	M08C0024

### Pipeline Reports Released in 2008-2009

DATE	LOCATION	COMPANY	EVENT	REPORT NO.
2007.04.15	Near Glenavon, Sask.	Enbridge Pipelines Inc.	Crude oil pipeline rupture	P07H0014
2007.07.24	Burnaby, B.C.	Trans Mountain Pipeline L.P.	Crude oil pipeline – third-party damage	P07H0040

### Rail Reports Released in 2008-2009

DATE	LOCATION	COMPANY	EVENT	REPORT NO.
2006.01.31	Buckskin, Ont.	Canadian Pacific Railway	Main-track derailment	R06T0022
2006.05.21	Kamloops, B.C.	Rocky Mountaineer Vacations Inc. and Canadian National	Train collision and derailment	R06V0111
2006.05.28	Fraine, B.C.	Rocky Mountaineer Vacations Inc.	Train derailment	R06V0119
2006.07.31	Lytton, B.C.	Canadian Pacific Railway	Main-track train derailment	R06C0104
2006.08.27	Chambord, Que.	Canadian National	Main-track train derailment	R06Q0096
2006.09.03	Log Cabin, B.C.	White Pass and Yukon Route	Runaway and derailment	R06V0183
2006.11.11	Moir, Ont.	Total Track Railway Construction and Maintenance Services Inc. (under contract to Canadian National)	Employee fatality	R06T0281
2006.11.22	Roxboro-Pierrefonds, Que.	Agence métropolitaine de transport	Pedestrian accident	R06D0044
2007.01.07	Montmagny, Que.	Canadian National	Main-track train derailment	R07Q0001
2007.02.12	Drummondville, Que.	Canadian National	Main-track train derailment	R07D0009
2007.02.13	Symington Yard, Winnipeg, Man.	Canadian National	Non-main-track train collision	R07W0042
2007.03.03	Juniper, N.B.	Canadian National	Main-track derailment	R07M0017
2007.04.23	Trail, B.C.	Kootenay Valley Railway (KVR)	Non-main-track train derailment	R07V0109
2007.04.28	Cobourg, Ont.	Canadian National	Main-track derailment	R07T0110
2007.07.04	Smiths Falls, Ont.	Canadian Pacific Railway	Runaway cut of cars	R07H0015
2007.08.04	Prince George, B.C.	Canadian National	Non-main-track collision	R07V0213

DATE	LOCATION	COMPANY	EVENT	REPORT NO.
2007.08.25	Tichborne, Ont.	Canadian Pacific Railway	Main-track train derailment	R07T0240
2007.10.27	Peers, Alta.	Canadian National	Main-track collision	R07E0129
2007.10.30	Malport, Ont.	Canadian National	Main-track derailment	R07T0323
2008.01.19	Saint-Arsène, Que.	Chemin de fer de la Matapédia et du Golfe inc.	Level crossing accident	R08M0002
2008.02.18	Aldershot, Ont.	Canadian National	Main-track derailment	R08T0029
2008.04.07	Centennial Station, near Ralph, Sask.	Canadian Pacific Railway	Main-track collision and derailment	R08W0058

### Air Reports Released in 2008-2009

DATE	LOCATION	AIRCRAFT	EVENT	REPORT NO.
2006.07.05	Grande Prairie Airport, Alta.	Eurocopter AS 350 B2 (helicopter)	Unintentional lift-off and collision with terrain	A06P0123
2006.07.12	Edmonton, Alta.	Embraer 190-100	Take-off performance calculation error	A06A0096
2006.07.15	The Pas, Man., 42 nm NE	Boeing 747-400 Airbus A319-100	Loss of separation	A06C0113
2006.07.19	Cordingley Lake, Ont.	Cessna 180H (floatplane)	Collision with terrain	A06G0186
2006.08.04	Caledon, Ont., 1 nm W	Cessna 172P Cessna 182T	Mid-air collision	A06O0206
2006.10.25	Knight Inlet, B.C.	Bell 206B (helicopter)	Loss of visual reference – collision with terrain	A06P0224
2006.11.03	Fredericton Airport, N.B., 100 nm NW	Canadair CL600-2B19	Loss of cabin pressure	A06A0115
2007.01.21	La Grande-4, Que., 25 nm N	DHC-2 Beaver	Fuel starvation	A07Q0014
2007.02.02	Cambridge, Ont.	Robinson R44 II (helicopter)	Uncontrolled flight into terrain	A07O0030
2007.03.13	Goose Bay, N.L.	Beech 1900 de Havilland DHC-8	Loss of separation	A07A0025
2007.03.31	Gander, N.L.	Antonov AN 124-100	Runway excursion	A07A0029
2007.04.01	Grand lac Germain, Que.	Piper PA31-350	Loss of control and collision with terrain	A07Q0063
2007.04.09	Moosonee, Ont.	Piper PA31	Landing gear collapse after touchdown	A07O0095
2007.04.18	Calgary, Alta., 50 nm SSW	Boeing 737-800 Boeing 737-600	Loss of separation	A07W0072
2007.04.26	Prince George, B.C.	Bell 212 (helicopter)	Reduction gearbox failure/engine power loss	A07P0123
2007.05.27	Chibougamau, Que., 176 nm NE	Eurocopter AS 350 B1 Astar (helicopter)	In-flight break-up	A07Q0085
2007.06.03	Postville, N.L., 7 nm S	Bell 407 (helicopter)	Reduction gearbox failure	A07A0056
2007.06.19	Winnipeg, Man., 150 nm N	Boeing 747-251B	In-flight cockpit fire	A07C0106



DATE	LOCATION	AIRCRAFT	EVENT	REPORT NO.
2007.06.25	Geneva, Switzerland	Bombardier BD-100-1A10	Hydraulic pump failure	A07F0101
2007.06.26	Bryants Raft Pond, N.L.	de Havilland DHC-2 Beaver (floatplane)	Collision with terrain during take-off	A07A0066
2007.06.30	Essex, Ont.	Piper Cub J3C-65	Collision with terrain	A07O0165
2007.07.01	Bernick Lake, Sask.	Eurocopter AS 350 B2 (helicopter)	Power loss and collision with water	A07C0114
2007.07.08	Muncho Lake, B.C.	de Havilland DHC-6 100 Twin Otter	Collision at take-off	A07W0128
2007.07.10	Matheson Island, Man.	Piper PA31-350 Chieftain	Engine power loss and forced landing	A07C0119
2007.07.20	Moosonee, Ont., 26 nm SW	Aerospatiale AS 350 B2 (helicopter)	Guy-wire strike during landing	A07O0190
2007.07.23	Fort McMurray, Alta., 35 nm NE	Aerospatiale AS 350 BA (helicopter)	Loss of control and collision with terrain	A07W0138
2007.08.09	Cranberry Portage, Man.	Bell 206L-3 (helicopter)	Collision with power line tower	A07C0148
2007.08.11	Winnipeg, Man., 15 nm NE	FireFly 12B (hot air balloon)	Hard landing, fuel leak and fire	A07C0151
2007.08.12	Cline River Heliport (CCR5), Alta.	Bell 206B (helicopter)	Power loss	A07W0150
2007.08.18	Rockton, Ont.	Pezetel SZD-51-1 Junior (glider)	Loss of control and impact with runway	A07O0233
2007.08.24	Surrey, B.C.	Aerostar S77A (hot air balloon)	Hot air balloon accident	A07P0295
2007.08.27	Boston Brook, N.B.	Ayres S-2R	Engine failure and forced landing	A07A0096
2007.08.28	Cochrane, Ont., 5 nm W	Bell 206L-1 JetRanger (helicopter)	Collision with terrain in deteriorating weather	A07O0238
2007.09.24	Oshawa, Ont.	Cessna 152	In-flight fire	A07O0264
2007.10.03	Postville, N.L.	Bell 206L Long Ranger (helicopter) Eurocopter AS 350 BA Astar (helicopter)	In-flight collision between two helicopters	A07A0118
2007.10.13	Bamfield, B.C., 15 nm NE	Cessna 172M (floatplane)	Loss of control and collision with terrain	A07P0345
2007.10.25	Chibougamau/Chapais Airport, Que.	Beechcraft A100	Loss of control and collision with terrain	A07Q0213
2007.10.26	Invermere, B.C., 11 nm E	Piper Malibu PA-46-310P	Engine failure and collision with terrain	A07W0186
2007.11.30	Armstrong, Ont., 20 nm SW	Aero Commander 500B	Double engine power loss	A07C0225
2008.01.04	Fort Smith, N.W.T.	British Aerospace Jetstream 3212	Runway overrun	A08W0001
2008.02.07	Golden, B.C., 9 nm W	Bell 212 (helicopter)	Loss of visual reference and collision with terrain	A08P0035
2008.03.19	Réservoir Gouin, Que.	Bell 206B III Jet Ranger (helicopter)	Loss of visual references and collision with frozen lake surface	A08Q0054
2008.05.24	Doctor Lake, N.W.T.	MDHI 369D (helicopter)	Loss of control and collision with terrain	A08W0096

DATE	LOCATION	AIRCRAFT	EVENT	REPORT NO.
2008.06.13	Buffalo Narrows, Sask., 14 nm NE	Cessna 337D	Fuel starvation and forced landing	A08C0124
2008.08.06	Alice Arm, B.C.	MD Helicopters 369D (Hughes 500)	Loss of control and collision with terrain	A08P0244
2008.08.08	St. Andrews, Man., 2 nm N	Cessna 207A	Engine power loss and forced landing	A08C0171



## Appendix B – Glossary

<b>Accident</b>	in general, a transportation occurrence that involves serious personal injury or death, or significant damage to property, in particular to the extent that safe operations are affected (for a more precise definition, see the <i>Transportation Safety Board Regulations</i> )
<b>Incident</b>	in general, a transportation occurrence whose consequences are less serious than those of an accident, or that could potentially have resulted in an accident (for a more precise definition, see the <i>Transportation Safety Board Regulations</i> )
<b>Occurrence</b>	a transportation accident or incident
<b>Recommendation</b>	a formal way to draw attention to systemic safety issues, normally warranting ministerial attention
<b>Safety Advisory</b>	a less formal means for communicating lesser safety deficiencies to officials within and outside the government
<b>Safety Information Letter</b>	a letter that communicates safety-related information, often concerning local safety hazards, to government and corporate officials

## Appendix C – Assessment Categories and Ratings for Responses to Board Recommendations

Responses to recommendations are assessed based on the extent to which the underlying safety deficiency has been or is being addressed. The acceptance or understanding of a deficiency is not a criterion for the assessment rating. The assessment criterion is the potential or actual effectiveness of action planned or taken to reduce or eliminate the deficiency.

Four categories are used to assess responses: *fully satisfactory*, *satisfactory intent*, *satisfactory in part* and *unsatisfactory*.

### **Fully Satisfactory**

A **Fully Satisfactory** rating is assigned if the action taken will substantially reduce or eliminate the safety deficiency. An acceptable alternative course of safety action to the one suggested by the recommendation may have been taken. The TSB typically assigns the deficiency file to an **Inactive** status.

### **Satisfactory Intent**

A **Satisfactory Intent** rating is assigned if the planned action, when fully implemented, will substantially reduce or eliminate the safety deficiency. However, for the present, the action has not been sufficiently advanced to reduce the risks to transportation safety. The TSB will monitor the progress of the implementation of the planned actions and will reassess the deficiency on an annual basis or when otherwise warranted. The TSB assigns the deficiency file to an **Active** or **Dormant\*** status.

### **Satisfactory in Part**

A **Satisfactory in Part** rating is assigned if the planned action or the action taken will reduce but not substantially reduce or eliminate the deficiency. The TSB will follow up with the respondent as to options that could further mitigate the risks associated with the deficiency. The TSB will reassess the deficiency on an annual basis or when otherwise warranted. The TSB assigns the deficiency file an **Active** or **Dormant\*** status.

## Unsatisfactory

An **Unsatisfactory** rating is assigned if no action has been taken or proposed that will reduce or eliminate the deficiency. This rating applies to situations where the TSB has received inadequate explanations to convince it that the risks are not worth pursuing. In the Board's view, the safety deficiency will continue to put persons, property or the environment at risk. In such a situation, the TSB should reassess the statement of the deficiency and pursue the issue with the respondent, in the hope of acquiring additional convincing information. The TSB will reassess the deficiency on an annual basis or when otherwise warranted. The TSB assigns the deficiency file an **Active** or **Dormant\*** status.

*\* This Deficiency File Status was approved by the Board in February 2009. As such, no Board recommendations have been assigned this status yet.*

## Appendix D – Deficiency File Status

Deficiency files can be assigned one of three status designations as follows:

<b>Inactive</b>	The assessment determines that the safety deficiency is rectified (that is, <b>Fully Satisfactory</b> ) or the residual risk is relatively low.
<b>Active</b>	The assessment determines that the residual risk associated with the deficiency is sufficient to warrant continued TSB involvement.
<b>Dormant*</b>	<p>The assessment determines that:</p> <ul style="list-style-type: none"><li>• no further action is planned to be taken and continued reassessment will not likely yield further results; or</li><li>• any further action would be the responsibility of a third party outside the direct influence of the recommendation recipient (for example, ICAO, IMO, FAA, FRA, etc.); or</li><li>• the deficiency file recommendation has been superseded by a subsequent recommendation.</li></ul> <p>Dormant files will not be reassessed on a regular basis. A dormant file may move to inactive status if the Board determines, on an ad hoc basis, that action has been taken that significantly reduces the residual risk.</p>

*\* This Deficiency File Status was approved by the Board in February 2009. As such, no Board recommendations have been assigned this status yet.*